

1 INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP02/10891

A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl⁷ F16H61/42, F16H47/04, B60K17/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl⁷ F16H59/00-61/24, 61/38-61/64, 47/02-47/04; B60K17/10

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1926-1996	Toroku Jitsuyo Shinan Koho	1994-2003
Kokai Jitsuyo Shinan Koho	1971-2003	Jitsuyo Shinan Toroku Koho	1996-2003

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	JP 2001-108061 A (Yanmar Diesel Engine Co., Ltd.), 20 April, 2001 (20.04.01), Full text; all drawings (Family: none)	5, 12, 15, 16 1-4, 6-11, 13, 14, 17
A	JP 2001-59573 A (Yanmar Diesel Engine Co., Ltd.), 06 March, 2001 (06.03.01), Full text; all drawings (Family: none)	1-9, 14-17
A	WO 01/16509 A1 (Yanmar Diesel Engine Co., Ltd.), 08 March, 2001 (08.03.01), Full text; all drawings & JP 2001-59573 A	1-9, 14-17

☒ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family.

Date of the actual completion of the international search
27 January, 2003 (27.01.03)Date of mailing of the international search report
12 February, 2003 (12.02.03)Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	JP 2000-74213 A (Shin Caterpillar Mitsubishi Ltd.), 14 March, 2000 (14.03.00), Full text; all drawings (Family: none)	5, 6-9
A	JP 2000-130558 A (Yanmar Diesel Engine Co., Ltd.), 12 May, 2000 (12.05.00), Full text; all drawings & WO 00/25041 A1 & EP 1146252 A1	10
A	JP 2000-127781 A (Yanmar Diesel Engine Co., Ltd.), 09 May, 2000 (09.05.00), Full text; all drawings & WO 00/25041 A1 & EP 1146252 A1	10
P, A	JP 2002-139125 A (Yanmar Agricultural Equipment Co., Ltd.), 17 May, 2002 (17.05.02), Full text; all drawings (Family: none)	10
A	JP 56-127843 A (Komatsu Ltd.), 06 October, 1981 (06.10.81), Fig. 2 (Family: none)	11
Y A	US 5971887 A (Aisin AW Co., Ltd.), 26 October, 1999 (26.10.99), Claim 8 & JP 10-115357 A Claim 8 & DE 19744679 A	12 13
Y A	JP 63-33584 B2 (Mazda Motor Corp.), 06 July, 1988 (06.07.88), Claims (Family: none)	12 13
Y	US 4949596 A (Honda Giken Kogyo Kabushiki Kaisha), 21 August, 1990 (21.08.90), Claims & JP 63-22737 A Claims & EP 253657 A2	15, 16
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 40354/1989 (Laid-open No. 130818/1990) (Hitachi Construction Machinery Co., Ltd.), 30 October, 1990 (30.10.90), Full text; all drawings (Family: none)	15, 16

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C (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 40662/1989 (Laid-open No. 130457/1990) (Hitachi Construction Machinery Co., Ltd.), 26 October, 1990 (26.10.90), Full text; all drawings (Family: none)	15, 16
A	JP 2000-108698 A (Iseki & Co., Ltd.), 18 April, 2000 (18.04.00), Full text; all drawings (Family: none)	17

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Box I Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

The invention of claims 1-4 calculates a load applied to a hydraulic transmission, the invention of claims 5-9 correction-controls an inclination angle of a swash plate, the invention of claim 10 reduces a swash plate position change rate at a mode switching, the invention of claims 11 and 13 makes a change between the upper and lower threshold values of an instruction current value defining a dead zone without any time difference, the invention of claim 12 shifts the hydraulic transmission to a neutral position by stepping on a brake pedal while idling, the invention of claim 14 provides a dead zone that will not change an output/input rotation speed ratio of the hydraulic transmission despite a (continued to extra sheet)

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest ☐ The additional search fees were accompanied by the applicant's protest.
☒ No protest accompanied the payment of additional search fees.

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Continuation of Box No.II of continuation of first sheet (1)

change in an engine rotation speed, the invention of claims 15-16 controls a governor and the hydraulic transmission by using a map, the invention of claim 17 controls the hydraulic transmission based on a vehicle turning status and the operation signal of a working machine.

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